

WHAT IS CLAIMED IS:

- 1 1. A method of forming an electrical fuse, the method comprising the steps of:
2 providing a semiconductor-on-insulator wafer having a first layer, an insulator layer, and
3 an active layer;
4 etching the active layer of a semiconductor-on-insulator wafer to form the electrical fuse;
5 doping the electrical fuse; and
6 siliciding the surface of the electrical fuse.
- 1 2. The method of claim 1, wherein the electrical fuse comprises a thin conductive strip
2 between two wider conductive areas.
- 1 3. The method of claim 1, wherein the step of doping is performed such that the electrical
2 fuse is fully depleted.
- 1 4. The method of claim 1, further comprising the step of forming a spacer around the
2 circumference of the electrical fuse.
- 1 5. The method of claim 1, wherein the step of siliciding the surface of the electrical fuse is
2 performed by depositing a metal and performing an anneal.
- 1 6. The method of claim 1, wherein the step of etching the active layer to form the electrical
2 fuse includes etching the active layer to form a source/drain region of a transistor.
- 1 7. The method of claim 6, wherein the transistor is a FinFET.

1 8. A method of forming a semiconductor device, the method comprising the steps of:
2 providing a substrate, the substrate having a first layer, an insulator layer formed on the
3 first layer, and an active layer formed on the insulator layer;
4 simultaneously forming a source/drain region of a transistor and an electrical fuse in the
5 active layer;
6 forming a gate electrode of the transistor on the source/drain region;
7 forming lightly-doped drain regions in the source/drain region;
8 forming spacers along the side of the gate electrode; and
9 implanting exposed portions of the source/drain regions and the electrical fuse such that
10 the exposed portions of the source/drain regions and the electrical fuse are substantially fully
11 depleted.

1 9. The method of claim 8, further comprising the step of siliciding the surface of at least one
2 of the gate electrode, source/drain region, and the electrical fuse.

1 10. The method of claim 8, wherein the electrical fuse comprises a thin conductive strip
2 between two wider conductive areas.

1 11. The method of claim 8, further comprising siliciding a surface of the electrical fuse by
2 depositing a metal and performing an anneal.

1 12. The method of claim 8, wherein the transistor is a FinFet.

1 13. An electrical fuse comprising:
2 a first section;
3 a second section; and
4 a third section electrically coupled to the first section and the second section;
5 wherein the first section, the second section, and the third section are formed from an
6 active layer of a semiconductor-on-insulator, and at least a portion of the surface of the first
7 section, the second section, and the third section are silicided.

1 14. The electrical fuse of claim 13, wherein the first section, the second section, and the third
2 section are fully depleted.

1 15. The electrical fuse of claim 13, wherein the third section is narrower than at least one of
2 the first section and the second section.

1 16. The electrical fuse of claim 13, further comprising a spacer formed along the perimeter of
2 the electrical fuse.

1 17. A semiconductor device comprising:
2 a transistor having a source/drain region formed on a substrate and a gate electrode
3 formed on the source/drain region; and
4 an electrical fuse having a first section and a second section interconnected by a third
5 section, the third section being narrower than at least one of the first section and the second
6 section;
7 wherein the electrical fuse and the source/drain region are formed in an active layer of a
8 silicon-on-insulator substrate.

1 18. The electrical fuse of claim 17, wherein the first section, the second section, and the third
2 section are fully depleted.

1 19. The electrical fuse of claim 17, wherein a surface of the electrical fuse is silicided.

1 20. The electrical fuse of claim 17, further comprising a spacer formed along the perimeter of
2 the electrical fuse.

1 21. The electrical fuse of claim 17, wherein the transistor is a FinFET.